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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,167	07/15/2003	Fumikazu Shimoshikiryoh	49185 CON (70840)	4293
21874	7590	09/27/2004		
EDWARDS & ANGELL, LLP P.O. BOX 55874 BOSTON, MA 02205			EXAMINER RUDE, TIMOTHY L	
			ART UNIT 2883	PAPER NUMBER

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/621,167

Applicant(s)

SHIMOSHIKIRYOH, FUMIKAZU

Examiner

Timothy L Rude

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 June 2004.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 4-16 is/are pending in the application.  
4a) Of the above claim(s) 5-8, 12, 14 and 15 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 4, 9-11, 13 and 16 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☒ Certified copies of the priority documents have been received in Application No. 09/342,776.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 20030715.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of species I in the reply filed on 01 June 2004 is acknowledged.

Claims 5-8, 12, and 14-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 01 June 2004. Applicant's specific traverse of claim 4 being generic is persuasive. Examiner considers all the limitations of claim 4 to be generic to elected species I.

### ***Claim Objections***

Claim 9 is objected to because it is dependent upon non-elected claim 8.

Claim 16 is objected to because of the following informalities: Base claim 4 does not have more than one first domain and more than one second domain; dependent claim 16 either lacks antecedent basis or it fails to further limit base claim 4. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi et al (Takiguchi) USPAT 6,351,299 B2 in view of Woo et al (Woo) USPAT 6,191,836 B1.

As to claim 4, Takiguchi discloses a liquid crystal display device [col. 1, line 61 through col. 10, line 17], comprising:

- a first substrate and a second substrate at least one of which is transparent;
- a liquid crystal layer interposed between the first and second substrates, the layer being made of a nematic liquid crystal material having a positive dielectric anisotropy;

- a first electrode and a second electrode provided on the first and second substrates, respectively, for applying an electric field substantially vertical to the first and second substrates across the liquid crystal layer;

- a first polarizing plate, 41, and a second polarizing plate each provided on an outer side of respective one of the first and second substrates, the first and second polarizing plates being arranged in a crossed Nicols arrangement; and

a phase difference compensator, 51, provided between the first polarizing plate and the first substrate, and a second phase difference compensator provided between the second polarizing plate and the second substrate wherein the phase-delay axes of the first and second phase difference compensators are parallel to each other and perpendicular to a phase-delay axis of the liquid crystal layer, wherein:

the first and second phase difference compensators compensate for the refractive index anisotropy of the liquid crystal molecules in a substantially horizontal orientation with respect to the surfaces of the first and second substrates in the absence of the applied voltage [col. 4, lines 17-22].

Takiguchi does not explicitly disclose a display wherein: the liquid crystal layer in each pixel region includes at least a first domain and a second domain in which liquid crystal molecules are oriented in different orientations.

Woo teaches the use of a liquid crystal layer in each pixel region that includes at least a first domain and a second domain in which liquid crystal molecules are oriented in different orientations to provide improved wider viewing angle [col. 2, lines 25-28].

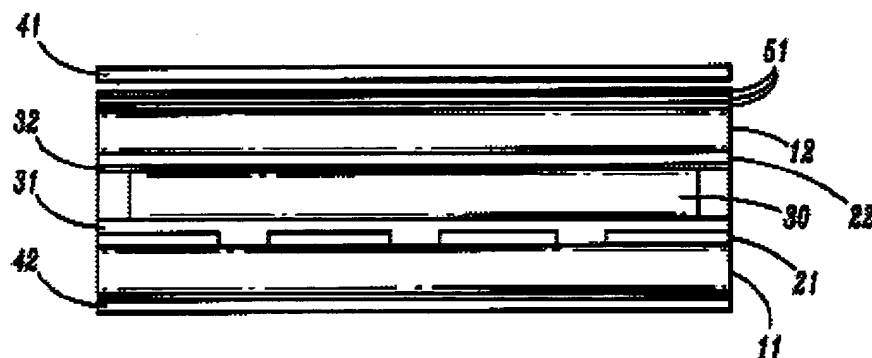
Woo is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a liquid crystal layer in each pixel region that includes at least a first domain and a second domain in which liquid crystal molecules are oriented in different orientations to provide improved wider viewing angle.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Takiguchi with the liquid crystal layer in each pixel region that includes at least a first domain and a

Art Unit: 2883

second domain in which liquid crystal molecules are oriented in different orientations of Woo to provide improved wider viewing angle.

Takiguchi

**FIG. 2B**

Woo

FIG.11e

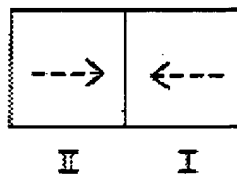
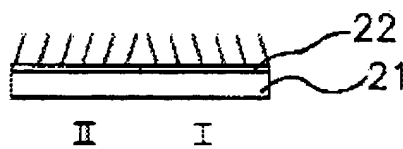


FIG.11f



As to claim 10, Takiguchi in view of Woo, as combined above, disclose a liquid crystal display device according to claim 4, wherein: directors of the liquid crystal molecules in the first and second domains in the middle of the liquid crystal layer along a thickness direction thereof rise in respective directions which are different from each other by about  $180^\circ$ ; and

the directions are at about  $45^\circ$  with respect to the polarization axis of each of the first and second polarizing plates.

As to claim 11, Takiguchi in view of Woo, as combined above, disclose a liquid crystal display device according to claim 4, wherein the liquid crystal molecules in the first and second domains are in a horizontal orientation [U in Figure 3].

As to claim 13, Takiguchi in view of Woo, as combined above, disclose liquid crystal display device according to claim 11, wherein pre-tilt angles of the liquid crystal molecules on the first and second substrates in the first domain are different from those in the second domain.

As to claim 16, Takiguchi in view of Woo, as combined above, disclose liquid crystal display device according to claim 4, wherein a total area of the first domain is equal to that of the second domain.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi et al (Takiguchi) USPAT 6,351,299 B2 and Woo et al (Woo) USPAT 6,191,836 B1, as applied to claims above, in view of Sharp USPAT 5,751,384.

As to claim 9, Takiguchi in view of Woo, as combined above, disclose liquid crystal display device according to claim 4 [Applicant's 8].

Takiguchi in view of Woo do not explicitly disclose a display wherein: a fifth phase difference compensator is provided between the first phase difference compensator and the third phase difference compensator; a sixth phase difference compensator is provided between the second phase difference compensator and the fourth phase difference compensator; the fifth and sixth phase difference compensators each have a positive refractive index anisotropy; a phase-delay axis of the fifth phase difference compensator is substantially perpendicular to a polarization axis of the first polarizing plate; and a phase-delay axis of the sixth phase difference compensator is substantially perpendicular to a polarization axis of the second polarizing plate.

Sharp teaches the use of a fifth phase difference compensator is provided between the first phase difference compensator and the third phase difference compensator; a sixth phase difference compensator is provided between the second phase difference compensator and the fourth phase difference compensator; the fifth and sixth phase difference compensators each have a positive refractive index anisotropy; a phase-delay axis of the fifth phase difference compensator is substantially



Art Unit: 2883

perpendicular to a polarization axis of the first polarizing plate; and a phase-delay axis of the sixth phase difference compensator is substantially perpendicular to a polarization axis of the second polarizing plate [Abstract] for better color performance [col. 36, lines 36-40]. Sharp is considered robust teaching for those having ordinary skill in the art of liquid crystals, at the time the claimed invention was made, in the use of up to six phase difference compensators for better phase compensation with motivation to combine.

Sharp is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add the use of a fifth phase difference compensator is provided between the first phase difference compensator and the third phase difference compensator; a sixth phase difference compensator is provided between the second phase difference compensator and the fourth phase difference compensator; the fifth and sixth phase difference compensators each have a positive refractive index anisotropy; a phase-delay axis of the fifth phase difference compensator is substantially perpendicular to a polarization axis of the first polarizing plate; and a phase-delay axis of the sixth phase difference compensator is substantially perpendicular to a polarization axis of the second polarizing plate for better color performance.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of a Takiguchi in view of Woo with the fifth phase difference compensator is provided between the first phase difference compensator and the third phase difference compensator; a sixth phase difference compensator is provided between the second phase difference

Art Unit: 2883

compensator and the fourth phase difference compensator; the fifth and sixth phase difference compensators each have a positive refractive index anisotropy; a phase-delay axis of the fifth phase difference compensator is substantially perpendicular to a polarization axis of the first polarizing plate; and a phase-delay axis of the sixth phase difference compensator is substantially perpendicular to a polarization axis of the second polarizing plate of Sharp for better color performance.

References cited but not applied are relevant to the instant Application.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Monday through Thursday.

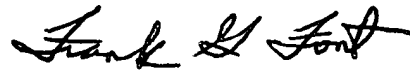
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



tlr

Timothy L Rude  
Examiner  
Art Unit 2883



Frank G. Font  
Supervisory Patent Examiner  
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